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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/607,039	06/27/2003	Tsutomu Horie	1095.1280	6413

21171 7590 04/02/2007  
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EXAMINER
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AKHAVANNIK, HADI

ART UNIT	PAPER NUMBER
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2624

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/02/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/607,039	<b>Applicant(s)</b> HORIE ET AL.	
	<b>Examiner</b> Hadi Akhavannik	<b>Art Unit</b> 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 January 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

***Response to Arguments***

1. 112 rejection is withdrawn.
2. The applicants arguments with respect to the rejection of claims 1-10 under 35 U.S.C. 103(a) have been considered but are not persuasive. Specifically, the applicant argues that Chen only teaches using sensitivity based on feature shape and not on pattern functions. The examiner notes that a shape is a type of pattern and therefore the "feature shape" reads on "pattern function." Also, the shape of a pattern is indicative of its function. The examiner therefore believes that feature shape as disclosed by Chen still reads on the claim language of claim 1.
3. Please see final rejection below.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-2, 5-7, 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shishido et al. (6865288, referred to as "Shishido" herein) in view of Chen et al. (6721695, referred to as "Chen" herein).

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Regarding claim 1, Shishido discloses an inspection device that identifies defects on a subject of inspection including photomasks or products fabricated using photomasks (see column 6 lines 39-48, which discloses a pattern inspection device), comprising: a reference data generator that generates reference data that is based on design data (column 7 lines 26-44 which discloses generating reference data to compare against the acquired image. The reference data is in the form of a CAD image).

an image acquiring unit that detects an image of the subject of the inspection and generates data to be inspected (column 7 line 45 to column 8 line 38 discloses an image acquiring method which inherently sends image data to the system);

a comparator that compares said data to be inspected with said reference data and detects a defect (see figure 1, item 60 and column 8 line 39 to column 9 line 5 discloses an image comparator);

a reference data extractor that extracts a region of said reference data that corresponds to where said detected defect exists; a defect registration determinator that refers a standard to region and determines whether to register said defect; and a defect memory that records said defect for which registration has been determined. (Column 11 lines 41-67 discloses a defect judging means that judges a defect against a predetermined standard to decide whether or not to register the occurrence as a defect or not. If the region is determined to be a defect then the defect is stored).

Shishido does not disclose using sensitivity codes.

Chen discloses including sensitivity class codes that are used to differentiate designated pattern functions by means of inspection sensitivity (see figure 3, column 3 line 59 to column 4 line 5, and column 4 lines 38-61, which disclose including sensitivity class codes that sets the threshold for each type of photomask);

an inspection sensitivity setter that allocates desired inspection sensitivities for said sensitivity class codes (see column 5 lines 10-24 discloses setting the inspection sensitivity for each class code);

It would have been obvious at the time of the invention to one of ordinary skill in the art to include in Shishido a sensitivity class setting means as taught by Chen. The reason for the combination is because it makes for a more robust system that will reduce the amount of false detects (see motivation by Chen in column 5 lines 21-25). Further, both inventions are from the same field of endeavor of defect detection.

Regarding claim 2, Chen discloses that the sensitivity class codes are expressed by a symbol (see Chen, figure 3, bottom row labeled "tech nodes", discloses multiple symbols the represent each sensitivity code).

Regarding claim 5, Chen discloses that it is possible to set said sensitivity class codes for regions other than those associated with said pattern functions (column 4 lines 6-25 and figure 1 discloses placing multiple sensitivity codes on a test plate to check all regions of the photomask).

Regarding claim 6-7 and 10, these are the method claims of claim 1-2 and 5 and the rejection of claim 1-5 addresses all limitations of claim 6-7 and 10.

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5. Claims 3-4 and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shishido in view of Chen as applied to claim 1 above, and further in view of Kikuchi et al. (6507944, referred to as "Kikuchi" herein).

The combination of Shishido and Chen disclose all aspects of claim 1 except for registering defects based on the overlap between an outline and the defect.

Kikuchi discloses creating a grid size based on rules (column 7 lines 11-19) and checking for defects by looking for the overlap between the area and the grid (see column 7 line 20 to column 9 line 67 as it discloses calculating the overlap).

It would have been obvious at the time of the invention to one of ordinary skill in the art to include in Shishido and Chen an overlap defect registration means as taught by Kikuchi. The reason for the combination is because it makes for a more robust system that can register defects by checking for the width of zones in different grids.

Regarding claim 4, Kikuchi discloses using a set of rules to determine the defect registration (see column 9 lines 14-45 discloses determining which layer the grid is associated with and whether the system should use a common grid).

Regarding claims 8-9 please see the rejection of claims 3-4 above as it discloses all aspects of claims 8-9.

6. Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shishido in view of Chen as applied to claim 1 above, and further in view of Usui et al. (6617083, referred to as "Usui" herein).

Regarding claims 11-12, the rejection of claims discloses all aspects of claims 11-12 except that the pattern functions are selected from a group of power supply lines,

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clock signal lines, address signal lines, data input-output signal lines and control signal lines.

Usui discloses using a rule based correction based on a specific pattern (see column 6 lines 4-55 as it discloses that each subarea has its own set of rules. Column 8 lines 38-43 discloses that the subareas are semiconductor circuit patterns. The examiner notes that power supply lines, clock signal lines, data input-output signal lines and control signal lines are also common semiconductor circuit patterns that are used to bias the semiconductors).

It would have been obvious at the time of the invention to one of ordinary skill in the art to include in Shishido and Chen specific pattern types as taught by Usui. The reason for the combination is because it allows for a system that is able to check the accuracy of specific portions of a mask and circuit board to ensure proper fabrication.

### ***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Zachariah et al. (6598211, discloses overlap pattern detection) and Noda (6711733, discloses overlap pattern detection. Please note that the US application of Noda is not prior art, however, the certified translation of the foreign priority application would be considered prior art).

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hadi Akhavannik whose telephone number is 571-272-8622. The examiner can normally be reached on 10:30-7:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Mancuso can be reached on (571)272-7695. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

3/28/07

HA



JOSEPH MANCUSO  
SUPERVISORY PATENT EXAMINER